

# INPLASY PROTOCOL

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None declared.

## Impact of glucagon-like peptide 1 analogs on cognitive function among patients with type 2 diabetes mellitus

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**Review question / Objective:** Diabetes is an independent risk factor for cognitive impairment. Little is known regarding the neuroprotective effects of glucagon-like peptide 1 (GLP-1) analogs on type 2 diabetes mellitus (T2DM). Here, the study aim to assess the impact of GLP-1 on general cognition function among patients with T2DM.

**Eligibility criteria:** Inclusion criteria were as follows: (1) an original article was recently published in English, (2) the population included subjects diagnosed with diabetes at baseline, (3) GLP-1 analogs is a single formulation rather than a fixed dose combination, (4) GLP-1 analogs were compared with no GLP-1 use or placebo or self-control before treatment, (5) the duration of antidiabetic agent use was 12 weeks or more, and (6) it provided quantitative measures of general cognitive function assessed by MMSE or MoCA. Exclusion criteria were as follows: (1) the publication was a review, case report, animal study, or letter to the editor, (2) the study did not clearly define clinical outcomes, (3) the authors could not provide valid data after being contacted, (4) duplicated data.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 05 June 2022 and was last updated on 05 June 2022 (registration number INPLASY202260015).

### INTRODUCTION

**Review question / Objective:** Diabetes is an independent risk factor for cognitive impairment. Little is known regarding the neuroprotective effects of glucagon-like peptide 1 (GLP-1) analogs on type 2 diabetes mellitus (T2DM). Here, the study

aim to assess the impact of GLP-1 on general cognition function among patients with T2DM.

**Condition being studied:** People with diabetes are 1.5–2.0 times more likely than those without diabetes to have cognitive decline, cognitive impairment, or dementia.

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The neuroprotective effects of glucagon-like peptide 1 (GLP-1) is controversy.

## METHODS

**Participant or population:** Patients with type 2 diabetes mellitus.

**Intervention:** Glucagon-like peptide 1 analogs.

**Comparator:** Self-controlled group or non GLP-1 treated group.

**Study designs to be included:** Prospective study (randomised controlled trial, prospective cohort study) .

**Eligibility criteria:** Inclusion criteria were as follows: (1) an original article was recently published in English, (2) the population included subjects diagnosed with diabetes at baseline, (3) GLP-1 analogs is a single formulation rather than a fixed dose combination, (4) GLP-1 analogs were compared with no GLP-1 use or placebo or self-control before treatment, (5) the duration of antidiabetic agent use was 12 weeks or more, and (6) it provided quantitative measures of general cognitive function assessed by MMSE or MoCA. Exclusion criteria were as follows: (1) the publication was a review, case report, animal study, or letter to the editor, (2) the study did not clearly define clinical outcomes, (3) the authors could not provide valid data after being contacted, (4) duplicated data.

**Information sources:** PubMed, Embase, Cochrane Central Register of Controlled Trials (CENTRAL).

**Main outcome(s):** General cognitive function assessed by Mini-mental State Examination (MMSE) or Montreal Cognitive Assessment (MoCA) .

**Quality assessment / Risk of bias analysis:** The quality of the included studies was assessed using the Newcastle Ottawa Scale (NOS).

**Strategy of data synthesis:** Considering the heterogeneity of general cognitive function assessments, the pooled studies were expressed as standardized mean difference (SMD) with corresponding a 95% confidence interval (95% CI), calculated by the random-effect model. All statistical analyses were conducted using the statistical program Stata 12.0E.

**Subgroup analysis:** Subgroup analysis based on treatment duration/age/treatment of dulaglutide.

**Sensitivity analysis:** Sensitivity analyses were carried out in parallel by progressively eliminating one study each time, so as to assess the potential sources of heterogeneity and the stability of our pooled results.

**Country(ies) involved:** China.

**Keywords:** GLP-1, cognitive function, type 2 diabetes mellitus.

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